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ABSTRACT

This guide is intended to provide a logical approach to the improvement of environmental education at the secondary school level. It includes: (1) an introduction: (2) four goals for environmental education: (3) the role of the environmental studies course: (4) where to go with environmental education: (5) a planning and evaluation checklist: and (6) an annotated resource list for the State of Washington. A guide to discussion of specific subject area references is also provided for the guide. (RE)

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.....CONCEPTUAL GUIDE TO ENVIRONMENTAL EDUCATION IN WASHINGTON STATE SECONDARY SCHOOLS.....

SE 031 459

Dr. Frank Brouillet, State Superintendent of Public Instruction, Olympia, Washington

This framework was written and developed for the Washington State Office of the Superintendent of Public Instruction by Mark Terry and the cover art work is from the book Ravens, Crows, Magpies, and Jays by Tony Angell

CONCEPTUAL GUIDE TO ENVIRONMENTAL EDUCATION IN WASHINGTON STATE SECONDARY SCHOOLS

AN INVITATION AND GUIDE TO IMPLEMENTATION

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CONCEPTUAL GUIDE TO ENVIRONMENTAL EDUCATION IN WASHINGTON STATE SECONDARY SCHOOLS

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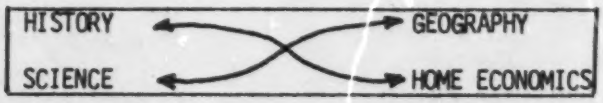
	(B)		13-14
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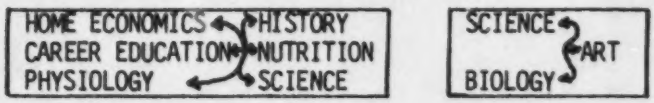
	(B)		25-26
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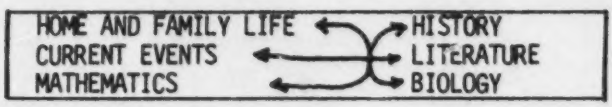
	(B)		35-36
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ENVIRONMENTAL EDUCATION
IN WASHINGTON STATE SECONDARY SCHOOLS

I. WHAT'S THIS ALL ABOUT?

(A) ...AND WHY ME?

The purpose of the document you are now reading is to guide a comprehensive review and improvement in the environmental education received by Washington State's secondary school students. It comes to you from the Office of the State Superintendent of Public Instruction in Olympia. We're glad it's in **your** hands for a number of reasons:

You may be a CLASSROOM TEACHER --

... in which case you can use the four goals for environmental education outlined in this document, plus any sections you find particularly important to your task, and conduct a review of the environmental content of your courses. You can locate suggestions in these pages (all sections are referenced in the Conceptual Guide and again in the Checklist, Section IX) and in the Washington State materials referenced here to make specific improvements in the courses you offer. We're aware you may never have considered yourself an environmental educator before -- we think otherwise and hope you'll read on a bit to see why. We're also aware that you may be able to extend your review to include your entire school or district: it is often the individual teacher that succeeds in instigating this essential form of evaluation. We hope this document, particularly the

Checklist to be found at the end, will help you and that you get a little help from your friends. Please let us know directly any way in which we can help.

You may be a CURRICULUM SUPERVISOR --

...in which case you can use the full scope of this document to review the environmental education received by a typical secondary student in your district. We hope you'll be able to introduce the appropriate teachers to the appropriate sections of this report **and** that this will help you stimulate greater continuity and congruity in the environmental education provided in the curriculum you supervise. We're especially hopeful that you will be instrumental in acquiring the time that full review and implementation will take and in encouraging interdisciplinary cooperation wherever appropriate among your teachers.

You may be a DEPARTMENT CHAIRPERSON --

...in which case we hope you will use this document to review with your department how successful you are in achieving the four goals set forth for environmental education. If you don't think environmental education has anything to do with your department, please read on! We think otherwise, and we hope you'll be able to work with other chairpersons to coordinate a school-wide review of the environmental education received by your students.

You may be a DISTRICT SUPERINTENDENT or a PRINCIPAL --

...in which case we hope you will read this document thoroughly and then use the Checklist at the end to conduct a full review with your staff to

achieve more coherent, conscious environmental education in your school or district. We think you have an especially important role in helping teachers utilize the school operation itself as one of the most effective tools for environmental education, something we stress in Section VI.

In short, we'd like to have the ear of every secondary educator in the State, but we're especially happy to have yours! We think you have an important role precisely because of how we perceive environmental education. And we believe the four goals for environmental education developed in this document can help you improve and evaluate your own area of responsibility in secondary education.

(B) ENVIRONMENTAL EDUCATION FOR THE 1980'S

Environmental education is so pervasive that each subject area that makes up a secondary program has important environmental content. Even school operation, as it is observed and understood by students, conveys environmental lessons. As you read through and use this document you will find that most secondary school subject areas are described as having some specific contribution to make to environmental education. Our approach to you, asking you to investigate your own role as an environmental educator, is based on the premise that doing so will strengthen the **overall** quality of your program -- not just its environmental impact. We believe that multidisciplinary exposure to environmental content is **essential** to a student's understanding of the environment.

To improve environmental education throughout an entire district does **not** necessarily mean there is a need to rush out and create new staff positions and programs. Rather, it requires that **all** staff become aware of the opportunity they have for providing conscious, planned environmental education within the existing program. Of course this kind of awareness and planning will require more than reading these pages. Suggested **in** these pages, however, are practical steps that will stimulate effective environmental education.

The origins of the current mandate to carry on this assessment and improvement in environmental education can be traced back almost twenty years in State education guidelines, proclamations, and programs. The Basic Education Act and current high school graduation requirements (see especially WAC 180-56-026) combine to make the challenge immediate, because environmental education **is** basic.

In the last decade concern for the environment has strengthened and spread among a body of people and institutions whose concerns are the promotion of:

> ENVIRONMENTAL QUALITY, QUALITY OF LIFE,
> STABLE ECONOMICS, JOB OPPORTUNITIES,
> SECURE AND SAFE ENERGY SUPPLY, AN
> ACTIVE, INFORMED ELECTORATE.

Today there is much less decrying of past sins, less "doomsday rhetoric;" instead, the common enemy has become ignorance. The goal has become the development and implementation of practical alternatives to dangerous trends: alternatives that emphasize enhancement of individual liberty, quality and diversity of lifestyles, assured economic stability, self-determination -- all within fundamental environmental limits.

Paralleling this maturing of environmental concern, even helping to guide it, has been the work of environmental educators throughout the nation, with some of the most notable programs coming from educators in Washington State. The hope that guides this document is that **all** educators find the goals for environmental education important in their classes: in actual course content, where applicable, and **always** in course conduct governing use of materials, energy, and the environment. This document is intended to stimulate environmental consciousness sufficiently in all Washington State secondary schools so that any student -- without necessarily any exposure to a class labelled "Environment" -- will graduate having achieved all four goals described below.

(C) A BRIEF WORD OF CAUTION

The experience of environmental educators, particularly in the last ten years, leads us to emphasize one important caution. Our purpose is not to shock, to alienate, to revel in the face of big, scary numbers, there is too much progress already made in the search for environmentally sound alternatives to suggest that any educator should spend time with this

HEAVY HEADLINES approach. The point of environmental education, as with all good education, is the development of skills in wise, informed, self-interest **and** community responsibility. Whatever one's own impressions of the future of environmental quality, it is incumbent on **all** educators to be "functional optimists" in the classroom. Pessimism as a basis for educating adolescents only produces alienation and self-serving, socially destructive behavior. Educators, like parents, must be in the business of instilling confidence, awareness, responsibility, and the skills with which to lead fulfilling lives in a free society. This is precisely the aim of environmental education.

To summarize (and to look ahead): Secondary education programs must be examined to ensure that environmental education is being offered, emphasizing multidisciplinary exposure and congruity between the environmental content a student perceives and the environmental awareness embodied in school policies and operation. This document outlines a method of locating gaps, inconsistencies, and missed opportunities throughout secondary school programs -- and provides specific suggestions for repairing, improving, and implementing environmental awareness throughout these programs. Throughout this process it is always important to consider the student's-eye view: what is being experienced and learned, both explicitly **and** implicitly, in the six years, grades seven through twelve? The following section details four goals for environmental education in Washington State secondary schools.

"Given the prevailing feelings of both the general public and private industry that environmental problems are indeed serious, and the agreement that education must play a critical role in resolving these problems, our task seems obvious. Developing, broadening, and properly managing objective environmental education for the common schools is, to a large extent the single most important part of the formula for the quality of life we all seek."

Washington State Office of Environmental Education. 1976. **A State of the Art Report.**

II. FOUR GOALS FOR ENVIRONMENTAL EDUCATION IN WASHINGTON STATE SECONDARY SCHOOLS

Environmental education carries with it an embarrassing train of definitions. In early years it was fashionable to define it as though it always dealt with the interrelationship of absolutely everything to absolutely everything else! It is broad in scope -- but such a broad definition helps little in implementation. In lieu of defining it once again, it is here broken down into four related goals.

INFORMATION

(1) Students should be able to derive from their secondary school program AN ACCURATE AND COMPREHENSIVE GROUNDING IN HOW THE ENVIRONMENT WORKS, including man's interaction with the environment.

COGNITIVE

VALUES

(2) Students should be able to derive from secondary school EXPERIENCE IN VALUING ENVIRONMENTAL QUALITY, including the aesthetics of both "untouched" and "man-made" environments.

AFFECTIVE

INDIVIDUAL ACTION

(3) Students should be able to derive from secondary school EXPERIENCE IN HOW PERSONAL CHOICES AND ACTIONS AFFECT ENVIRONMENTAL QUALITY, with the aim of identifying and improving the opportunities in their own future.

INDIVIDUAL SKILLS

COMMUNITY ACTION

(4) Students should be able to derive from secondary school EXPERIENCE IN METHODS OF ENACTING COMMUNITY RESPONSIBILITY, including all aspects of citizen - government - business decision making.

GROUP SKILLS

Each of these goals receives close attention in what is to follow, but first it is important to realize that leaving any one goal unmet results in serious miseducation. **All four need to be met throughout a student's secondary school experience.** Goal (1), by itself, might be good science, but exists outside the realm of human values and therefore leaves untouched the pressing problems and decisions we face -- all of which depend on our ability to decide what we value in order to reach satisfactory solutions. Goal (2) **with** Goal (1) is still insufficient because it leaves the student without skills to affect the student's own life. Values without action are hardly worthy of the name.

The addition of Goal (3) is essential in order to set in motion actions based on enlightened self-interest. In fact, citizens can only lead effective lives with an understanding of HOW THE WORLD WORKS, a sense of THEIR OWN VALUES, and SKILLS TO ACT on behalf of their own values. But even stopping here, at Goal (3), and calling it a day is a fatal blunder in a political system based on self-government. The student may be left with the impression that individual actions are sufficient, that group mediation is unnecessary, and that the machinery that exists for exercising our political will may as well be left to rust. Government and community thus neglected -- government without citizenship -- quickly deteriorates into government by decree. Goal (4) **must** be achieved, empowering students with the skills of community interaction, community decision-making, and community implementation.

District-wide assessment, whenever and however you can stimulate it, is essential to ensure that a coherent program takes each student through a realization of all four goals. Short of this, great benefit will still be accomplished simply by your assessing and improving your own classes, department, or school with respect to these goals.

In what follows, each goal will be discussed in terms of improvements in existing courses -- a multidisciplinary approach, establishment of interdisciplinary cooperation, development of innovative programs in particular areas, and availability of State materials and programs to achieve these ends. In Section IX these discussions are summarized in checklist form to aid in the process of evaluating and planning for implementation. Remember, throughout, to take the student's-eye view.

III. GOAL (1)

AN ACCURATE AND COMPREHENSIVE GROUNDING IN HOW THE ENVIRONMENT WORKS

(A) A MULTIDISCIPLINARY APPROACH

It is traditional to expect this goal to be met within the science program. Here students meet the environment from various science perspectives and may learn a number of strategies for investigating it. But to relegate study of the environment to one department or one course is to **undermine**

a full understanding of the environment **and** of each subject area in turn. **All** departments need to assess the degree to which they can ensure environmental awareness in their courses and plan strategies to improve and coordinate their offerings.

Multidisciplinary efforts are crucial to the attainment of Goal I, especially to convey the interaction of man and environment. By "multidisciplinary" is meant the introduction of environmental concepts in all manner of courses -- not haphazardly or to the exclusion of essential topics, but to strengthen and enliven the very presentation of those essential topics. For example, the following subject areas have critical roles in environmental education:

GEOGRAPHY - the role of environments in shaping societies, and vice versa.

HISTORY - the role of environmental conditions and resource use in the rise and fall of governments and civilizations.

MATHEMATICS - the use of problem-solving techniques and graphic display to understand environmental processes and trends.

HOME ECONOMICS - the environmental sources of food, water, energy, shelter.

HEALTH - the environmental interactions crucial to public health and patterns of both infectious and metabolic disease.

Only with this rich background of alternative viewpoints, from the above subjects and others, can a student be expected to understand the complex workings of the environment.

In SCIENCE programs themselves it is particularly important to remember how small a proportion of students go beyond basic secondary science requirements: the presence of an environmental emphasis in an advanced course is laudatory in its own right, but may have no impact on the vast majority of students. Throughout the junior and senior high basic programs that most of our students experience, there should be a heavy emphasis on the natural history of the environment. In addition to the established emphasis on the processes of science and the experimental method, these courses provide the bulk of what graduates will know about the natural and man-made environment.

All students need an introduction to the categories of living things and environments in the world, emphasizing precise knowledge and experience of the local environment. High school courses should increasingly emphasize the processes that link organisms and their environments. Without having to attend specialized courses, our graduates should be as familiar with the inevitable boomerang effect of environmental interactions -- as familiar with the return of a "waste" thought to have been thrown "away" -- as they are with the behavior of a laboratory balance.

Goal (1) includes man's interrelationship with environment: his effects on it and its effects on him. Even if the most excellent natural history and ecology are being taught throughout a secondary **science** program, an essential part of the goal is not being realized if no attention is given

in **science** courses to man's institutions and history of environmental interaction. Our processes of food, energy, and materials gathering must be introduced as comparable in kind, if not in scale and not always in intent, to those of other organisms.

An argument might be raised that such a view of man-in-nature does injustice to a more noble view of mankind. But such a view in no way needs to imply that a man is **only** subject to nature in the same manner as other organisms. Indeed, there would be no point in environmental education at all if man had no superior consciousness or ability to value, care, and effect purposeful change. It is **because** of man's unique attributes that we must go beyond Goal (1) to reach Goals (2) through (4). For these goals to be comprehensible, however, requires that a student be familiar with the physical terms of human survival, just as this is essential to the understanding of any other species.

Important contributions can be made by a specialty or advanced course in **environmental studies**. A full discussion of such a course can be found in Section VII.

(B) INTERDISCIPLINARY COORDINATION

When a group of teachers at a grade level realize the full potential of the time in which they see the same student by sharing a subject matter focus, the student is frequently startled into awareness that something pretty important is going on. The mere fact that adults have taken time

to plan and complement each other's activities in order to convey better understanding may create an added respect and attentiveness in the student. The very nature of the environment, particularly including man's role, demands interdisciplinary awareness in order to achieve understanding. Where a pair or larger team of teachers find an area of common interest and importance in their various courses, all encouragement and opportunity need to be given them to plan for coordination. Even a single day, so planned, can have a lasting impact on the student.

Imagine a ninth grader stumbling into a week in which:

HISTORY studies the great Middle Eastern civilizations, while...

GEOGRAPHY studies the importance of river flooding and topsoil fertility, while...

SCIENCE studies the role of soil nutrients in plant growth, while...

HOME ECONOMICS studies the role of grains in the human diet...

with each teacher drawing examples from the others -- perhaps gathering in one location for a joint viewing of a documentary on the Nile.

Such connections should never be forced into a curriculum, but review of a grade level program almost always reveals opportune occasions, whether a single day or a full semester, in which various classes can work to

deepen understanding of each other's content and pack a great impact. The pervasiveness of environmental problems and phenomena produces more opportunities for such an approach than could ever fully be utilized.

(C) ENERGY EDUCATION

In recent years we have discovered that taking energy for granted has placed us in an embarrassing, if not downright threatening, position: living as though fuel supplies were infinite while watching them decline daily. In response, efforts have been made to incorporate energy education into all school programs. This area continues to deserve special attention, in part simply to see where we have arrived and determine the necessary next steps.

As pervasive as environment is, so is energy: it is the currency of all environmental interactions. Note that it is not the end or substance of the interactions, only the currency. All environmental, social, economic, and political questions have energy implications, and vice versa. The health and stability of our students' communities and job futures depend on decisions involving energy. Myths about energy can only lead to disaster.

It is clearly not sufficient to restrict energy education to advanced **science** courses when what is most needed is an energy-literate public, most of whom will never take an advanced **science** course. We need to

evaluate whether or not energy concepts are well integrated into basic courses taken by all students. The most important concepts fall into three areas:

(1) **The Laws of Energy Behavior**

These must be taught simply, largely by experience and example, rather than at the level of college physics. Their usefulness for the general student is to bring home such ideas as the inevitability of heat loss from any house, along with the corresponding opportunities for energy conservation through insulation.

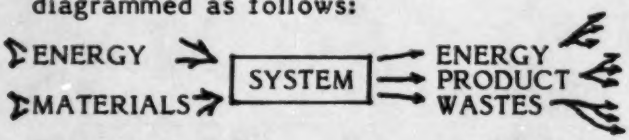
(2) **The Proper Use of Energy Units**

Energy units need to become as familiar as any other measurement units. Our students, not to mention ourselves, are increasingly involved in understanding utility bills, appliance efficiency ratings, even the energy effectiveness of solar-assist water heating -- **all** activities that depend on proper use of energy units.

(3) **Energy/Systems Thinking**

Because energy is involved in every event, understanding its role can help us resolve the complexity of our world into forms we can better understand. Energy/Systems thinking is a method of bookkeeping to avoid overlooking the obvious. All events, operations, happenings (machines, homes, schools, industries, organisms...) can be diagrammed as follows:

SURROUNDINGS



SURROUNDINGS

Then the following questions can be asked:

What are the INPUTS from the SURROUNDINGS?
What are the operations in the SYSTEM?
What are the OUTPUTS to the SURROUNDINGS?
What are the other SYSTEMS required to provide the INPUTS and to handle the OUTPUTS?

There is an obvious major role for these topics in all SCIENCE classes. Equally important, however, is the introduction of energy concepts and use of energy units in a variety of other subject areas. Any course that touches on the variety of lifestyles found around the world, both present and past, for instance, inescapably touches on energy use. On this basis alone energy is important in GEOGRAPHY, HISTORY, HOME ECONOMICS, DRIVER EDUCATION, FOREIGN LANGUAGE. Even more important in energy education is the role of school operation itself. In school, students daily observe habits and policies affecting energy use. This topic will be treated in Section VI.

(D) FIELD TRIPS

It is also essential, in meeting Goal (1), to involve students in an awareness of their world, the world happening around them. Outdoor Education traditionally accomplishes part of this and will be discussed in detail under Goal (2), where it is also of prime importance. Community field trips are the other principal method for investigating the immediate SURROUNDINGS.

Knowing how our environment works includes knowing the industries and institutions that are such a major part of making it work for us. Our students must be encouraged to open their eyes and ears and to inquire, **what** is going on out there!? Somewhere in a secondary program each student needs contact with each of the important institutions that process and produce our energy, food, material goods, services. This means getting out to the farm, the industrial assembly plant, food processing plant, transportation facility, power plant, and others.

We too frequently allow sheer size to alienate us from the institutions we depend on most heavily. Most of these public and private giants have realized that we will get nowhere without knowing each other -- that ignorance only breeds distrust and leads to the wrong questions, while knowledge, even though it may bring an occasional thorn to an occasional side, is preferable as a basis for interaction, planning, and legislation. Guided tours are almost always provided through advance booking and, with thoroughly prepared students, can result in superb educational experiences.

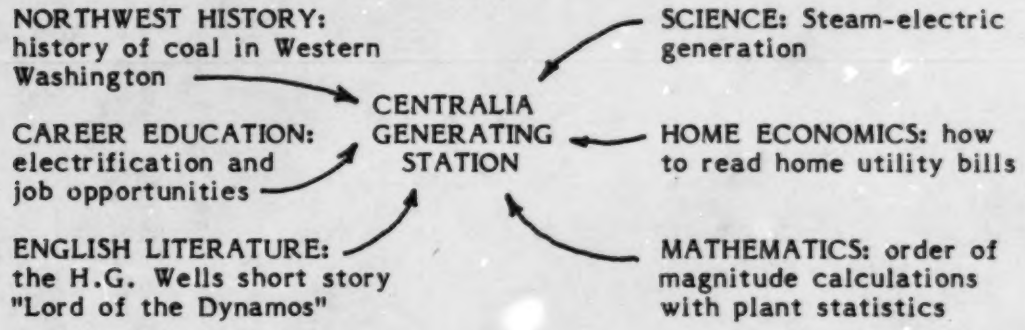
Especially useful in planning such trips is the energy/systems thinking described in the previous section. With this terminology, students can prepare to identify, during a tour:

INPUTS of energy and materials.
OUTPUTS of energy (heat), product, and wastes.
OPERATIONS carried on within the SYSTEM.
Support SYSTEMS required to provide the INPUTS and to handle the OUTPUTS.
The boundary between SYSTEM and SURROUNDINGS.

Groups or pairs of students might each take one aspect of the above framework as the focus for a single investigation. All groups can then rely on each other, upon returning to the classroom, to work out the full picture.

Pre-tours by the teachers and discussions with guides are essential to prepare students adequately. Many of the institutions worth touring are so big that maps ought to be made up beforehand in order to improve the students' understanding during the tour.

Such trips are an encouragement to us all, simply because of planning and time requirements, let alone subject matter, to develop interdisciplinary cooperation. How much better a tour of the Centralia coal-fired power plant would be, for instance, if the following group of teachers jointly planned and carried out the trip and follow-up:


NORTHWEST HISTORY: history of coal in Western Washington
SCIENCE: Steam-electric generation
CENTRALIA GENERATING STATION
CAREER EDUCATION: electrification and job opportunities
HOME ECONOMICS: how to read home utility bills
ENGLISH LITERATURE: the H.G. Wells short story "Lord of the Dynamos"
MATHEMATICS: order of magnitude calculations with plant statistics

Further productive interaction could be achieved by providing a forum for student-prepared presentations to other groups in the school following a detailed study of the institution.

Finally, let us not continue to overlook the most obvious field trip of all: the school -- as a major public institution requiring INPUTS, producing OUTPUTS, extending into the SURROUNDINGS, and certainly carrying on identifiable OPERATIONS within its walls. More will be said about this under Goal (4), but we must familiarize ourselves and our students with how such an institution works -- and the school all but begs to be studied. No student should leave a school without the experience of mapping it, following out its environmental connections, and ultimately helping in its maintenance and improvement as a result of understanding it better.

(E) STATE MATERIALS

"The Office of Environmental Education for Washington State Office of Public Instruction has developed learning activities and strategies to meet the need for objective and thorough information on environmental subjects. The need for such information and skills development has grown enormously rather than diminishing as the issues of energy, land use, water and air quality, ecological considerations and population and growth have become part of forming public policy."

Washington State Office of Environmental Education. 1978. **Five Year Plan**.

MATERIAL/PROGRAM TITLE	NATURAL HISTORY	GENERAL SCIENCE PROGRAMS	MAN-IN-NATURE	INTERDISCIPLINARY COORDINATION	ENERGY EDUCATION	FIELD TRIP PLANNING
CISPUS INFORMATION BOOKLETS	I/R	I/R		R		R
ENCOUNTER WITH THE NORTHWEST ENVIRONMENT	I/R	R	I/R	R		I/R
NORTHWEST LEGACY (FILM)	R	R				R
1000 SUNS (FILM)		R	R	R	R	R
SUN DAY ENERGY WATCH CALENDAR		R	R	R	I/R	R
CONSERVACTION		I/R	I/R	R	I/R	R
ENERGY, FOOD, AND YOU		I/R	I/R	I/R	I/R	I/R

AREA OF SPECIAL USEFULNESS

R: RESOURCE MATERIAL

I: INSTRUCTIONAL STRATEGIES

IV. Goal (2)

EXPERIENCE IN VALUING ENVIRONMENTAL QUALITY

(A) MULTIDISCIPLINARY VALUES EDUCATION

It has become increasingly apparent that values, whatever their content, either disappear or slip from our grasp if experience is not gained in the techniques of identifying, discussing, acting on, and respecting them. The once appealing notion that values should be kept out of the classroom has an awesome outcome: values end up being kept out of life, consciously, unconsciously, or haphazardly, by students who never learned how to locate them in the first place.

The impetus behind environmental education begins with a strongly held belief that environmental quality is **important** to man, not merely interesting. Students need an education in environmental quality. Details of quality may be, indeed **will** be discussed and argued and even tried in the courts -- but that **some** level of quality is essential to human life is not in serious question. Identifying levels of quality implies recognition of values.

Values education is too important and too potent to be left to any one course or group of courses. No teacher needs to be an expert, but all teachers need to be skilled in bringing values discussions into their classrooms. In particular, students are most impressed when they find that values and conflicts are being addressed in arenas not necessarily labelled "values education." If it's important enough to do without a label, it must be really important...

The enthusiasm of a teacher conveys something **real**, something both understood and **felt** by students. For instance, the **biology** teacher who bothers to convey to a class that living things are beautiful, among other characteristics, leaves a lasting mark on that class. Stepping out of the academic mold from time to time is refreshing -- refreshingly human -- to all concerned. Likewise, the interest of a teacher in any values question, when brought sensitively before a class, teaches the lesson that **values are important**.

Many environmental issues are touchy, perhaps involving parents' employment, politics, or lifestyles. To avoid these issues is to undermine students' confidence that our system can handle controversy at all, let alone controversy in the classroom. What teachers need to do in these, and indeed in any values discussions, is to provide a carefully governed forum in which a **premium** is placed on verifiable information, on **being heard**, and **hearing** points of view. Praise must be reserved for the class that is able to air well-researched views in a humane manner, not insisting on consensus when consensus is clearly absent. Values discussions worthy of the name serve only as beginnings, not as ends in themselves. There is **always** need for follow-up, just as in this document Goals (1) and (2) **must** be followed by Goals (3) and (4). Further information is always needed, further discussion, and ultimately action based on the values held.

An excellent technique for breaking down barriers and tuning up ears is to assign opposite sides of a question to students who seem to hold, respectively, the opposite views: assign the pros to reasearch the con

position and defend it, assign the cons to do the reverse. Praise, again, is due the articulate presentation of well-researched information and ideas rather than the particular position taken.

Another effective technique is to role play actual decision making and problem solving. Students research a problem from different points of view and maintain those points of view throughout a problem solving effort -- acting out the necessary discussions and mediation together.

The more obvious values of importance in environmental education are actually quantifiable. These are the standards of environmental quality that have **measurable** impact on health, safety, and survival. Our students need to study these conditions that shape their lives in a variety of different courses.

In HEALTH, the levels and kinds of environmental conditions that influence health and disease need to be studied. Infectious diseases are clear cases of ecological interaction, involving parasites, hosts, competition for resources. And of particular importance to a modern understanding of health are the levels at which various components of air, water, food, or even the radiation environment may stimulate systemic disorders. Cancer itself is increasingly understood to be a potential indicator of environmental disruption in certain instances -- though usually a generation too late. HEALTH courses can provide opportunities to research,

discuss, and form decisions about environmental health issues **before** our students confront these issues in misunderstood headlines, tax allocations, and ballot propositions.

Much the same kind of role is appropriate for both NUTRITION AND DRIVER EDUCATION. There is no mistaking the need for certain levels and combinations of nutrients in food, and this is directly related to the levels of nutrient available to food organisms in the environment. Nor is there any question that a quantifiable decrease in the number of highway deaths accompanied a quantifiable decrease in average speed on the nation's highways. The only questions here concerns the levels of time, money, and energy that should be expended to attain certain levels of quality or safety. Precisely because both NUTRITION and DRIVER EDUCATION are so important in the lives of secondary school students and because they both deal with day-to-day lifestyle decisions, they are given extensive treatment under Goal (3).

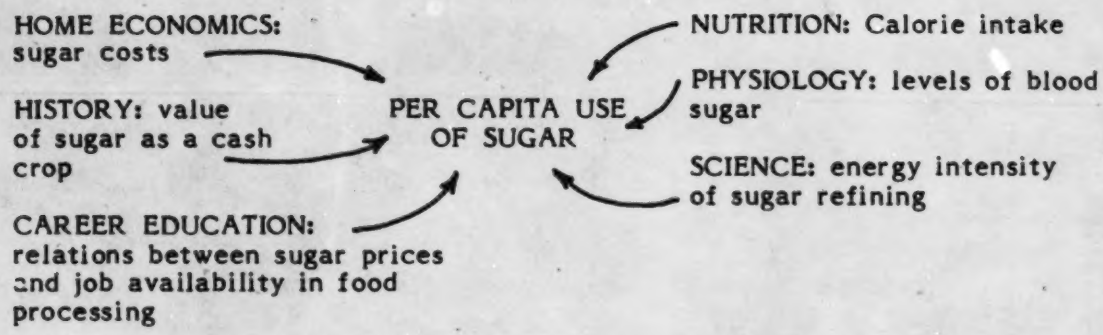
There is another realm of values assigned entirely on the basis of aesthetic appreciation: certain conditions are pleasing to look at or be in, while others offend the sensibilities. These values, though impossible to quantify, are every bit as important for human welfare. The need to recognize and cultivate them arises out of that slippery area of human uniqueness referred to in Section I. Lizards, after all, can become infected or malnourished, but seldom suffer from limits placed on their creative expression.

All the ARTS, including visual and performing, along with LITERATURE and WRITING play crucial roles in developing conceptions of value. Excellence in art **always** involves the recognition of values, often the successful coordination of otherwise conflicting values. Students, through the ARTS, need to know that there <u>are</u> aesthetic values -- not because they all need to develop identical values, far from it -- but because they need to be conscious of their own as they emerge. Only thus can they develop their own talents and aspirations, let alone respect those of others.

Aesthetic appreciation provided the seed from which all modern environmental consciousness grew. What made early headlines were stories of some perceived value, some form of beauty at least in the eyes of some, being threatened, altered, or destroyed. And it is in the enhancement of **perception** that the ARTS can principally aid environmental education. The environment, once perceived, once experienced, generally gives rise to strongly held values. But perception does not come as naturally as we might like. Frequently what is best perceived is that which is in the process of being sketched, or sculpted, or photographed, or narrated, or portrayed in dance or music. The act of creation, in response to what has been or is being experienced in the environment, sharpens and guides awareness of that environment.

(B) INTERDISCIPLINARY COORDINATION

Many of the issues exposed in environmental education fairly beg for a truly interdisciplinary values assessment. A problem of quantifiable values in nutrition, for instance, might best be studied in the following coordinated program for as little as a day or as long as a week:


HOME ECONOMICS: sugar costs
HISTORY: value of sugar as a cash crop
CAREER EDUCATION: relations between sugar prices and job availability in food processing
PER CAPITA USE OF SUGAR
NUTRITION: Calorie intake
PHYSIOLOGY: levels of blood sugar
SCIENCE: energy intensity of sugar refining

As a means of interdisciplinary involvement with aesthetic values the well-planned introduction of techniques of the ARTS and art appreciation into other subject areas is always productive. One only has to look at the drawings of the early naturalists or photographs taken by contemporary scientists to discover how important aesthetic motivation can be in SCIENCE, for instance. Grade level teams or pairs, as in a BIOLOGY teacher conducting vertebrate dissection and an ART teacher conducting drawing classes using skeleton models, need to find points of common interest. Simply the sight of an ART teacher visiting a SCIENCE lab, or vise versa, in order to appreciate the work going on and perhaps contribute to it conveys a heightened sense of value to the student.

It would be possible to sink the already burdened educational ship with values discussions going on in every corner of a school every day. Grade-level planning is essential to ensure that intensity of discussion in one area or during one week, for example, is balanced by more traditional study in other areas and other times. But it is safe to say that **any** enhancement of values education in a school, encouraging a climate of investigation, discussion, and concern, will have great benefit for a student's ability to understand complex environmental issues.

(C) OUTDOOR EDUCATION

Especially important in developing a valuing sense (or a sense of value) is a student's experience with outdoor education. If a student escapes such experience entirely, then the lesson is that the natural environment is of little value, unimportant. If the outdoor experience is isolated, not connected to the rest of the program, and is too intensely focused on learning a specific set of skills, then an already sensitized student may benefit, but the rest may find the outdoors to be at best a lark, at worst a rainy nuisance.

What is needed, and there is thankfully much precedent for it in Washington State, is a sensitive, integrated program in the outdoors -- really a series of excursions spaced throughout the secondary years. In these programs values are conveyed that are not only directly related to the environment, but that also foster a sense of competence and of belonging to a larger world -- very important to an adolescent. Such programs are vital to nature study itself, of course, but what goes on **between** the lines, on that walk back from the study site or when the eyes are lifted for a moment from the handlens, leaves the most important and lasting impact on the student. Actions in the outdoors have immediate, visible relationships to the environment. Things that are done and that are not done, and their observable effects, convey what is important about the environment better than any text or film possibly could.

Personnel can make or break outdoor education. In the outdoors students look even more intently for guidance and example than they do in the confines of the school, especially those for whom there is no family experience of the outdoors. The staff and teachers coordinating the program, therefore, must be skilled not only in achieving the specific aims of the experience, but in creating quiet, unapprehensive time in which the voice of the environment can work its way into the generally cluttered consciousness of the adolescent.

The urgent need for such experiences for our youth is, in part, a measure of how isolated we have become from our environment. But the eagerness and joy of students who are successfully introduced to the outdoors is equally a measure of how strong our ties to the natural world really are, how close our natural springs of appreciation and empathy are to the surface.

Cispus Environmental Learning Center in the Cascades is a superb model of what an outdoor center can be and has for years fostered programs in diverse subject areas as well as the "hard" environment sciences. The more courses that can eventually find ways to utilize centers such as Cispus, the State Parks, and others, the better will lessons be learned about environmental quality and the nature of values.

(D) STATE MATERIALS

> "The quality of human life is determined to a large extent by the capacity to understand the essential uses as well as the limitations of one's environment."
>
> Tony Angell, Supervisor, Environmental Education Programs, Northwest Section. Washington State Office of Environmental Education. **Encounter with the Northwest Environment**.

MATERIAL/PROGRAM TITLE	QUANTIFIABLE VALUES	AESTHETIC VALUES	INTERDISCIPLINARY COORDINATION	OUTDOOR EDUCATION
CISPUS ENVIRONMENTAL LEARNING CENTER		I/R	R	I/R/S
CISPUS INFORMATION BOOKLETS				R
ENCOUNTER WITH THE NORTHWEST ENVIRONMENT	R	R	R	I/R
NORTHWEST LEGACY (FILM)		R	R	R
1000 SUNS (FILM)		R	R	
SUN DAY ENERGY WATCH CALENDAR	R		R	
CONSERVACTION	I/R		R	
ENERGY, FOOD, AND YOU	I/R		R	
TRAFFIC SAFETY-FUEL CONSERVATION	I/R		I/R	
STATE PARKS ENVIRONMENTAL LEARNING CENTERS				R/S

AREA OF SPECIAL USEFULNESS

R: RESOURCE MATERIAL

I: INSTRUCTIONAL STRATEGIES

S: INSTRUCTIONAL SITE

V. Goal (3)

EXPERIENCE IN HOW PERSONAL CHOICES AND ACTIONS AFFECT ENVIRONMENTAL QUALITY

(A) A MULTIDISCIPLINARY APPROACH TO COMMITMENT

Values without actions to support them might just as well not exist. But it is not immediately obvious that secondary school students have sufficient control over their own lives to act on behalf of strongly held environmental values in more than a few instances. Their lifestyles and corresponding environmental impacts are largely determined for them. The secondary school experience, however, can and should provide opportunities to develop awareness of the **importance** of commitment, of the choices that determine a lifestyle, and of those areas in which students actually **can** make personal choices and see positive environmental results.

Goal (3) rests on the premise that self-interest and the actions that follow self-interest **can** benefit environmental quality: that environmental quality -- at least in the immediate surrounding -- is a major personal concern. Goal (1) may be achieved through study of the larger environment, Goal (4) stresses group cooperation, even the values developed in achieving Goal (2) may be based on seemingly lofty, disinterested ideals. But Goal (3) requires a **self**-centered focus, with one eye on the surrounding environment.

No course ought to have a monopoly on "commitment education" -- the study of what it means to lead a committed life -- but the HUMANITIES offer excellent opportunities. The HUMANITIES, HISTORY, and LITERATURE all are concerned with vital personal choices: commitment, or lack of it, is generally what is worth writing about and what moves great figures in history. These courses need to bring the **skills** of commitment, personal choice, and principled action home to the students' own lives as well, to avoid the implication that such acts are reserved for figures in history or fiction -- that real people either can't or needn't bother. An issue important in the life of the school or its community can be selected to study in parallel with the main subject of the course, and students can be guided through a sequence of identification of values at stake, discussion, and encouragement to act on the basis of values. A student ought to be impressed, for instance, not only with Huck Finn's internal debate over whether or not to turn in his friend Jim but with the student's own responsibility to act on behalf of new students at school to make them feel welcome and at home.

SCIENCE courses can also provide forums for the assessment of personal choices, actions, and extrapolated effects. Students might do an initial inventory of habits that have suspected impact on the environment, as in the simple neglect of a leaky faucet at home. Without at first changing the status quo they can take simple baseline measurements, for instance of daily water needs, water use, and water waste. Reasearch and study should proceed concurrently on the geologic, meteorologic, and engineering aspects of the community's water supply.

Rather than stop here, however, the connection needs to be made that particular water use patterns imply, or are the result of, particular values. These values, perhaps regarding the importance of water quality, should be identified through class discussion. Then, with all the research information at hand **and** with a consciousness of the values at work, students can assess the impact of their own behaviors on the environment. What might be the impact of changes in their behaviors? What changes in values might be necessary to achieve various behavior changes? What would be the impact on the environment, as in the water supply, if **everyone** assumed the values of a particular student and acted accordingly?

In any such discussion it is essential to plan for conscious action, either to maintain current behavior or to change it. Schedules for reporting progress might be set so that only brief reviews are necessary during future class time, perhaps no more than updating a bulletin board.

The subject matter of HEALTH is always closely related to personal actions and their outcomes. This concern needs to be extended to how the individual affects immediate environmental quality. A unit on smoking, for example, needs to go beyond the physiology of nicotine and carbon monoxide to explore environmental ramifications. What are the effects of smoking on the health of non smokers -- frequently friends and loved ones -- who share the immediate environment? What are the effects of tobacco farming on the competition for prime agricultural land and the price of food? Similar questions can be raised and explored with regard

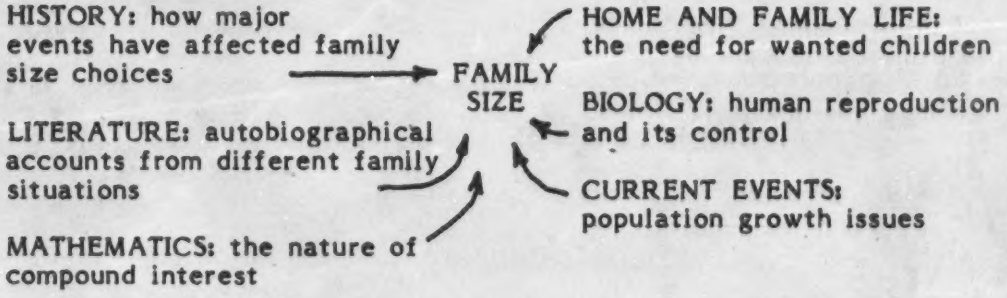
to many other health phenomena over which students have some control and which affect the students' immediate environment. Again, the values that guide student actions and the results of those actions need to be clarified, discussed, made conscious.

In HOME AND FAMILY LIFE EDUCATION the primary need is to foster understanding, caring, and common sense in young adults. Family size planning, while of utmost importance to the environment, is an issue that should be approached from the need for **wanted** children and for the skills that build sound, loving relationships within families. As a background for family planning decisions, our students need to be familiar with population trends in our region, nation, and the world in order to understand corresponding trends in near-term job availability, housing markets, food prices, and environmental quality.

The decision of **where** to live, especially in relation to place of work, has enormous environmental quality implications -- since easily half of a family's energy budget can be devoted to transportation, depending on commuting distances. Also important are consumer product choices, where decisions based on convenience, habit, cost, are also decisions about environmental quality -- over packaging, for instance, may have a direct effect on the family's immediate environment if it requires that the municipal dump expand right up to the back fence. Discussions to be taken home and carried on with the student's own family can lead to excellent opportunities for the student to aid in environmentally conscious decision making.

(B) INTERDISCIPLINARY COORDINATION

Interdisciplinary coordination can make the process of personal decision making more intense and, in the end, better balanced. If family size itself were taken as an issue, for instance, the HOME AND FAMILY LIFE educator might act as coordinator for a week spent studying the issue from the points of view of these various subject areas:


HISTORY: how major events have affected family size choices
FAMILY SIZE
HOME AND FAMILY LIFE: the need for wanted children
BIOLOGY: human reproduction and its control
LITERATURE: autobiographical accounts from different family situations
CURRENT EVENTS: population growth issues
MATHEMATICS: the nature of compound interest

The point of such a week is not to graduate a class of same-sized families... rather, it is to encourage conscious decisions regarding this issue, whether in the end they are based on religious or moral precepts or some other group of values. The best thing that could result would be to graduate a class that believes family size is something worth talking about and that knows how to continue the discussion.

As was mentioned under Goal (2), interdisciplinary coordination through grade-level teams is essential to ensure that a balance is struck. Secondary students should not be sent reeling from one week to another in which every course is attempting to develop conscious personal

decisions! The timing and emphasis of the various courses during any given year are important and should be planned beforehand, adjusted as necessary during the year.

(C) FOOD SYSTEM EDUCATION

A subject area that looms large in the lives of secondary students and is crucial to environmental education is food. A revolution in NUTRITION and HOME ECONOMICS education, to achieve better understanding of food and its provision, will have enormous benefit for environmental education. The scope of food education is defined and bounded by our food itself: it extends from the purely physiological aspects of nutrition, to the impact of food packaging materials on economy and environment in Washington State, to the relationship between grain trade and political stability among the world's nations. It is essential that our secondary programs graduate students who know where their food comes from and how it gets from there to the table.

Study of food and its environmental relationships is especially useful in achieving Goal (3) because it provides extensive opportunities for decision making and experimentation with personal choice. Students can evaluate their own food habits, concurrent with an introduction to any part of the subject, whether it be nutrition or world supply patterns. They can continue by pursuing the origins of their own food choices and of their family's choices. To what extent is tradition involved? To what extent is food industry advertising involved?

There are two avenues along which to explore self-interest: good health from good nutrition, and environmental/economic health from good agriculture and marketing. Nutritional standards exist, even though they are incomplete, against which to evaluate food habits. And environmental/economic impacts of agricultural and marketing practices can be evaluated using a number of different measures: efficiency of energy use, stability of soil quality and water supply, availability of jobs in agriculture and support industries, stability of prices.

The beauty of the subject is in part that students can deal simultaneously with the most abstract extrapolations -- how their food choices affect world oil reserves -- **and** the most immediate, personal skills -- they can grow and prepare some of their own food. The aim of both these extremes is to empower students to take control over a vital aspect of their own lives while at the same time raising their consciousness about the not-too-distant connections between their actions and forces at work in the larger world. That is good environmental education.

(D) TRANSPORTATION EDUCATION

Similarly immediate in the lives of adolescents, particularly high school students, is transportation. And transportation decisions have a similar degree of impact on the environment. In some districts it may be possible to enlarge the scope of the existing DRIVER EDUCATION course to include a wider subject area -- transportation education. In many districts it may be most productive to develop an interdisciplinary program coordinated **through** the DRIVER EDUCATION course.

Just as with food, the automobile defines its own subject boundaries. They range from the safety engineering of a particular design, to the impact of transportation alternatives on the economy and environment of Washington State, to the relationship between oil imports and political stability among the world's nations. Our students should graduate knowing where their automobiles -- that is, their aluminum, steel, glass, plastic, oil, gasoline -- come from and where they go to.

Students can evaluate the impact of transportation choices on their immediate surroundings. To what extent has transportation been planned in their community? To what extent is the automobile important in their lives **beyond** its transportation function -- as an economic entity, legal entity, symbolic entity? To what extent are their feelings and choices with regard to transportation related to advertising, peer pressure, the availability of alternatives? Given our heavy dependence on the automobile, to what extent can changed driving habits alone effect significant fuel conservation and safety improvement.

The automobile is so involved in the symbolic life of adolescents that evaluating issues of self-interest and environmental quality may be difficult. But an extremely important contribution can be made simply by the inclusion of **other** transportation technologies in any course that deals with the automobile: basic training in the use of local mass transit, car pooling, bicycling. Sufficient interest might lead to the

formation, from within a DRIVER EDUCATION course, of school campaigns to promote observance of the 90 kph speed limit, use of public transit, walking, and limitation of school parking to carpools.

(E) CAREER EDUCATION

Self-interest operates particularly strongly in the later years of high school when careers receive serious attention. In the early years of environmental education it was assumed the major impact of environmental consciousness on jobs futures would be in the opening of numbers of jobs in environmental fields. Such possibilities do exist, have increased, and deserve a part in any CAREER EDUCATION program. But the maturing of environmental concerns has led to a more important emphasis: the availability of jobs in general and the position of work in society.

The energy crunch, in particular, has drawn attention to a disturbing relationship between increased energy use (especially electrical) and availability of jobs. The conventional wisdom that more energy means more jobs simply does not always hold true. Many kinds of modern technology have eliminated more jobs than they have created, either by the replacement of people by machines or by the limitation of further capital investment.

It is miseducation to counsel our students about jobs as though the conventional energy wisdom were always true, or as though population patterns were not shifting, or as though O.P.E.C. did not exist. Likewise, our students need to know that there is a great increase in investment

to research, develop, and market innovative energy/environment technologies. Small scale solar heating industries, for instance, are springing up in every region of the country and are by their very nature labor-intensive rather than automated.

A return to a more labor-intensive society is perhaps the most important trend that our students need to understand. Work itself has been demeaned in our and our students' eyes in part because of the displacement of craftsmanship by repetitive, dehumanizing tasks. We need to educate that a return to a more labor-intensive economy is not a retreat to some precivilized state, but a step forward. Our ingenuity is challenged anew to make the maintenance tasks of life in a complex, urbanized society compatible with human dignity. We will all benefit from technologies that make work itself as satisfying and humanizing as leisure time activities.

In CAREER EDUCATION and in school operation itself, respect and praise need to be focused on examples of craftsmanship and skilled maintenance. The small business, emphasizing pride in product or service needs as much attention as do the various professions traditionally esteemed in society. An important outcome of the maturing of environmental concern over the last decade has been the realization that **free enterprise**, involving small firms that offer quality in work environment, human relations, **and** environmental interaction, is absolutely consonant with high standards of environmental quality.

Human ingenuity can do much better than to put us all out of work. Incorporating environmental awareness into CAREER EDUCATION can go far toward directing that ingenuity in channels that enhance our students' power over their own future and over the quality of the environments in which they will live.

(F) STATE MATERIALS

> "...once students understand the inefficiency of our present use of energy, they will begin to see that conservation offers unlimited opportunities for expression and ingenuity."
>
> Tony Angell and Chris Peterson. 1977. **Energy, Food, and You**. Washington State Office of Environmental Education.

MATERIAL/PROGRAM TITLE	COMMITMENT: HUMANITIES	COMMITMENT: SCIENCE	HEALTH AND ENVIRONMENTAL QUALITY	FAMILY LIFE AND ENVIRONMENTAL QUALITY	INTERDISCIPLINARY COORDINATION	FOOD SYSTEM EDUCATION	TRANSPORTATION EDUCATION	CAREER EDUCATION
RENASCENCE (FILM)	R		R	R	R			R
1000 SUNS (FILM)	R	R		R	R		R	
CONSERVACTION	R	R			R	I/R	I/R	
ENERGY, FOOD, AND YOU		R	R	R	I/R	I/R		
ENCOUNTER WITH THE NORTHWEST ENVIRONMENT				R	R	R	R	R
TEACHING POPULATION CONCEPTS		R		I/R	R			
SUN DAY ENERGY WATCH CALENDAR		R		R	R	R	R	
TRAFFIC SAFETY-FUEL CONSERVATION					I/R		I/R	

AREA OF SPECIAL USEFULNESS

R: RESOURCE MATERIAL

I: INSTRUCTIONAL STRATEGIES

VI. Goal (4)

EXPERIENCE IN METHODS OF ENACTING COMMUNITY RESPONSIBILITY

(A) A MULTIDISCIPLINARY APPROACH

Community consciousness combined with the skills necessary to maintain self-government is the substance of Goal (4). It has **always** been an acknowledged function of American public education. But against a background of increasing governmental size, centralization of policy making, and general lack of enthusiasm for the **process**, time-consuming as it is, teachers and students have lost sight of the goal. Environmental education cannot be complete without it.

Our students must gain enthusiasm for the grassroots political process and be empowered to affect their own lives and the quality of their own environment through government institutions -- **their** governmental institutions. They must graduate with a conception of the value of public involvement and with experience in that involvement.

There is need for a revitalization of education in all aspects of community function and political process. GOVERNMENT courses are essential for all our students, who need to be familiar with how representation is affected, how an idea becomes a bill or an initiative, how a bill becomes a law,

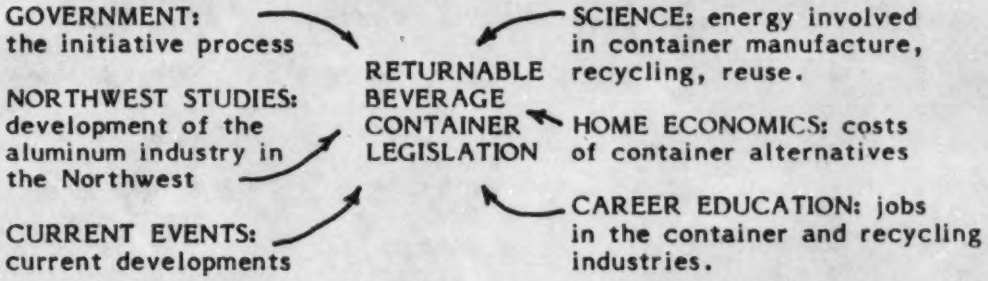
and how smaller communities determine needs and govern. Ideally all should graduate able to describe the drama that occurs daily in Olympia as well as they might describe **Hamlet**.

It is important that government be studied in process rather than in the abstract. Like any complex game with many players it is best learned as the play is followed, not by pouring endlessly over the rules. Thus, issues of current interest need to be followed **as they arise** in the local community, State Legislature, or Washington, D.C. Environmental issues make prime topics of study. But other than the obvious advantage in increasing environmental awareness, it is just as beneficial to study **any** community issue. The **skill** of government is learned in any case, whatever the content at hand.

Educators in **all** departments should be encouraged to bring before their classes any legislative or community issue that touches on their subject matter. A study of modern genetics in BIOLOGY, for example, could hardly be complete without discussing the involvement of government, at various levels, in attempts to regulate experimentation with recombinant DNA. There is an important values education at work here: students learn that government is **vital** when a teacher brings up governmental issues in a novel context -- not because this is GOVERNMENT class but because of the inherent significance of the issues.

(B) INTERDISCIPLINARY COORDINATION

An interdisciplinary approach to a local environmental issue may be the very best educational tool for community skills education. An example very much alive in Washington State in 1979 related to actions regarding possible legislation for returnable beverage containers. How better to educate students than by devoting a week to carefully coordinated study at a grade level along the following lines:


GOVERNMENT: the initiative process
NORTHWEST STUDIES: development of the aluminum industry in the Northwest
CURRENT EVENTS: current developments
RETURNABLE BEVERAGE CONTAINER LEGISLATION
SCIENCE: energy involved in container manufacture, recycling, reuse.
HOME ECONOMICS: costs of container alternatives
CAREER EDUCATION: jobs in the container and recycling industries.

Where such continuity is possible it would be even more productive to establish a week of follow-up in the succeeding year during which the issue can be studied again with all intervening developments taken into account.

(C) REGIONAL STUDIES

An invaluable opportunity for achieving environmental and COMMUNITY EDUCATION goals is the PACIFIC NORTHWEST STUDIES course. All too frequently taken as just another pesky credit necessary for graduation, PACIFIC NORTHWEST STUDIES is the obvious forum for regional education aimed at developing true regional consciousness.

Our region consists of interlocking ecosystems, each requiring cooperative and environmentally sound management in order to produce benefits and perpetuate the good health of the region. This is the essential background against which all regional government must be carried out. Regional studies programs need to study the history and future of regional self-sufficiency based on wise resource management. This concept has stimulated many of the most creative efforts to achieve energy and materials conservation. It has as its aim not a closed-door provincialism, but a healthy independence in order to enhance quality of life, stabilize the economic climate, and promote environmental quality. Significant conservation options exist every time some element of our economy can be provided **internally** rather than at long distance.

Students need to study our region and its subunits with particular emphasis on the decision-making centers that determine its future. Energy planning, agricultural land preservation, conflicts over use of Columbia River water -- all these have a serious effect on environmental quality and all provide excellent opportunities for students to study community and governmental processes.

(D) SCHOOL OPERATION

Beyond infusing traditional classroom approaches with environmental and regional consciousness, it is of utmost importance to educate toward Goal (4) **by example**: the school itself must provide for and encourage participation by its students in decision making, policy setting processes.

Recycling, reuse, and energy conservation programs -- developed and run by students -- should be an accepted part of all schools' daily operation. Careful coordination is required to involve as many students as possible in a meaningful way in these programs. Teacher supervision is essential, but much of the coordination can be carried out by teams of students. This is an important area of involvement for any advanced environmental class, as will be discussed in Section VII. Beside the obvious environmental and economic gains such programs can achieve, the educational goal is to model and carry out cooperative planning, decision making, and action. Our students desperately need such models of effective, responsible citizen action.

(E) COMMUNITY EDUCATION

It is also important to turn outward, that is to involve students directly in the local community. The content of whatever program achieves this community extension matters little compared to the quality of the interaction between students, community leaders, and citizens. A school-generated recycling program, student-run home energy checks, actual student installation of insulation or weather stripping, or simply an informational program put on by students involving community representatives -- all these would serve this goal. The Office of Community Education in the Superintendent of Public Instructions Office in Olympia exists in order to foster community-school interaction and can provide descriptions of many exemplary programs.

Environmental education is best served when students actually **participate** in workings of local government. They need to be **inside** the legislative chambers, mayor's office, courtrooms, campaign headquarters -- these are the anatomy and natural history of their democracy. It would be sad indeed if an incomplete approach to environmental education in our schools led to a generation of students who could easily identify members of the local sauna, but who had never seen the mayor face-to-face. According to the definition and goals for environmental education presented in this document that would constitute a failure.

(F) STATE MATERIALS

> "Education carries a burden in this society for creating a high level of public competency. Directly translated, this implies an educational experience that provides citizens who can intelligently participate in determining what kind of life to live and accept the responsibility for the consequences of their decisions."
>
> David A. Kennedy, Office of Environmental Education. John C. Jones, Energy and Man's Environment. 1974. "The Point of Inflection: Great Opportunities Disguised as Energy Problems.

MATERIAL/PROGRAM TITLE	GOVERNMENTAL PROCESS	INTERDISCIPLINARY COORDINATION	REGIONAL STUDIES	SCHOOL OPERATION	COMMUNITY EDUCATION
CISPUS ENVIRONMENTAL LEARNING CENTER			I/R		
NORTHWEST LEGACY (FILM)		R	R		
ENCOUNTER WITH THE NORTHWEST ENVIRONMENT		R	I/R		I/R
CONSERVACTION		R	I/R	R	I/R
ENERGY, FOOD, AND YOU		R	I/R	R	I/R

AREA OF SPECIAL USEFULNESS

R: RESOURCE MATERIAL

I: INSTRUCTIONAL STRATEGIES

VII. THE ROLE OF AN ENVIRONMENTAL STUDIES COURSE

An ENVIRONMENTAL STUDIES course provides a wonderful educational opportunity for students and teacher(s) within a secondary education program. Its structure, whatever department(s) it is offered by, should be designed to meet all four of the environmental education goals presented in this document.

Placement of the course deserves careful attention. The greatest value can be realized by making it available to students who have completed their basic science courses. In-depth ENVIRONMENTAL STUDIES **require** this background, because the environmental sciences are synthetic sciences that depend on the information and technique of the basic sciences. A premature study of ecology, for example, is made very difficult if it has not been preceded by basic BIOLOGY -- for the course to be worthwhile, a major amount of its time must be given over to teaching the biological concepts that might be better learned in a more general context. And if the ENVIRONMENTAL STUDIES course is offered to advanced students, these students can develop the sophistication needed to be an important component of the school's entire environmental education program.

An advanced class provides an excellent forum for values discussions -- Goal (2) -- precisely because the students have the background needed to gather detailed information from many sources -- Goal (1) -- and can take

the time for full discussion. To meet Goal (3) the students need to study and experiment with personal environmental alternatives: models need to be built, installations and homes visited, local opportunities unearthed and innovators heard. Global issues need study; but more important is experience with the related issues that involve the student, school, and community directly -- Goal 4.

It is an important lesson that knowledge bears with it certain responsibilities: to be privileged to take an ENVIRONMENTAL STUDIES course requires that a contribution be made to the level of awareness and of environmental quality in the school and community. Some provisions should be made for advanced students to organize and maintain a school/community recycling program, a school energy inventory, a community environmental newsletter, or some similar effort. ENVIRONMENTAL STUDIES students would be excellent aides in carrying out a portion of the environmental education review called for in this very document: they could do much of the legwork to insure that all educators are appraised of environmental education needs, distribute materials, and provide special expertise in improving the continuity of programs between the grades and various schools in a district. The time taken from the ordinary content of such a course to extend this service to all members of the school community will pay off many times over in the basic lessons learned in environmental and community responsibility.

VIII. WHERE TO GO FROM HERE

(A) WHEN IS ENOUGH, ENOUGH?!

Are we talking about turning secondary education inside out? Are we talking about spending so much time in the woods and the courtroom that the classroom stays empty? Are we talking about so much interdisciplinary education that nobody teaches what they thought they could anymore? Does the lunchroom have to be dug up for an organic garden?

Emphatically, no!

What we **are** talking about:

1: Environment consciousness in all personnel and all students.

2: Commitment to guiding students toward self-direction **and** community responsibility.

3: Progress in interdisciplinary coordination.

And if efforts along these lines were not **already** underway in many schools across Washington State there would have been no point in making this invitation to you to progress even further. It is largely because we have begun reaching them here and there that we even know what the four environmental education goals are!

(B) A COLLECTION OF FIRSTS

1. Review the sections of this document that concern your areas of interest.
2. Evaluate your contribution to environmental education, actual and potential, using the Checklist (Section IX).
3. Plan new approaches and improvements.
4. Familiarize yourself with the State materials and programs that might help you (Section X).

1. Begin discussions with colleagues across departmental lines to find fruitful areas of cooperation.
2. Develop programs to use the school itself as an environmental education tool.

1. Organize a faculty group to review the full scope of environmental education in your school or district.
2. Request, or grant, depending on which you normally do, in-service workshop time to plan improved implementation of environmental education.

1. Get in touch with Supervisors of Environmental Education in the State Superintendents Office in Olympia.
2. Ask for advice, help, materials, encouragement, time, money, the moon.

Do all, or even some, of the above -- and we think the results will look pretty good from a student's-eye view!

IX. CHECKLIST

AN EVALUATION AND PLANNING TOOL

The statements presented below are based on specific recommendations made throughout this document. Check the applicability and truth of each statement against your own course, school, or district. Plan your initial improvements around those areas that appear not to satisfy the appropriate statements.

Each statement is keyed to the page from which it was derived in the main text.

HEADING			PAGE
THE EVALUATION PROCESS	☐ 1.	Throughout evaluation of environmental education, the student's-eye view is given consideration.	7
	☐ 2.	Teachers, administrators, and students are evaluating the district's environmental education to improve its content and continuity.	9
ENVIRONMENTAL CONTENT	☐ 3.	Environmental content is presented in all appropriate courses.	10
	☐ 4.	Pairs or grade-level teams of teachers are planning interdisciplinary study of the environment, as in the example given of cooperation among HISTORY, GEOGRAPHY, SCIENCE, and HOME ECONOMICS.	13
ENERGY	☐ 5.	Basic courses taken by all students emphasize energy concepts.	15
	☐ 6.	School operation emphasizes energy conservation.	16

	☐	7.	Students regularly take field trips to visit major local institutions that affect their environment.	17
FIELD TRIPS	☐	8.	Students employ energy/systems thinking to study community institutions.	18
	☐	9.	Interdisciplinary teams coordinate field trips.	18
	☐	10.	The school itself is toured by all students and studied as a major community institution having environmental impact.	19
GOAL I RESOURCES	☐	11.	A collection of ideas for use at Cispus Environmental Center: CISPUS INFORMATION BOOKLETS; ENCOUNTER WITH THE NORTHWEST ENVIRONMENT; NORTHWEST LEGACY; 1000 SUNS; SUN DAY ENERGY WATCH CALENDAR; CONSERVACTION; ENERGY, FOOD, AND YOU.	20
	☐	12.	Teachers in all subjects provide carefully governed forums for discussions of values questions.	21
	☐	13.	All values discussions are followed up with further information gathering, discussion, and action.	22
	☐	14.	Quantifiable aspects of environmental quality are studied in HEALTH, NUTRITION, and DRIVER EDUCATION.	23
ENVIRON-MENTAL VALUES EDUCATION	☐	15.	Students learn the importance of setting their own aesthetic standards in the ARTS, LITERATURE, and WRITING.	25
	☐	16.	Students develop sharper perception of their environments through artistic expression.	25
	☐	17.	Interdisciplinary teams are coordinating study of values questions, as in the example given of cooperation among HOME ECONOMICS, HISTORY, CAREER EDUCATION, NUTRITION, PHYSIOLOGY, and SCIENCE, and in the example of cooperation between ART and SCIENCE.	25
	☐	18.	Grade-level planning ensures a balance of values education experiences.	26

HEADING			
OUTDOOR EDUCATION	☐ 19.	Secondary school students make a series of OUTDOOR EDUCATION excursions.	27
	☐ 20.	Outdoor experiences are planned to provide time for direct appreciation of environmental values.	27
	☐ 21.	School programs are coordinated with Cispus Environmental Learning Center and other outdoor education facilities.	29
GOAL II RESOURCES	☐ 22.	The following State materials and programs are familiar and on hand: CISPUS ENVIRONMENTAL LEARNING CENTER; A COLLECTION OF IDEAS FOR USE AT CISPUS ENVIRONMENTAL CENTER; A YEAR AT CISPUS; CISPUS INFORMATION BOOKLETS; ENCOUNTER WITH THE NORTHWEST ENVIRONMENT; NORTHWEST LEGACY; 1000 SUNS; SUN DAY ENERGY WATCH CALENDAR; CONSERVACTION; ENERGY, FOOD, AND YOU; TRAFFIC SAFETY/ FUEL CONSERVATION.	30
ENVIRONMENTAL QUALITY AND PERSONAL CHOICE	☐ 23.	HUMANITIES, LITERATURE, and HISTORY provide opportunities to study issues of personal commitment in the students' own lives.	31
	☐ 24.	SCIENCE, HEALTH, and HOME AND FAMILY LIFE provide opportunities to study the impact of personal choices on the environment.	32
	☐ 25.	Students are encouraged to discuss the impact of family decisions on environmental quality at home with their own families.	34
	☐ 26.	Teachers coordinate interdisciplinary study of complex commitment issues that touch on the students' own lives, as in the example of cooperation among HOME AND FAMILY LIFE, BIOLOGY, CURRENT EVENTS, MATHEMATICS, LITERATURE, and HISTORY.	35

HEADING				
FOOD SYSTEM EDUCATION	☐	27.	Students graduate knowing where their food comes from and how it gets to their tables.	36
	☐	28.	Students evaluate their own food habits according to standards of nutritional and environmental quality.	36
	☐	29.	Students know how to grow and prepare some of their own food.	37
TRANSPORTATION EDUCATION	☐	30.	DRIVER EDUCATION includes transportation issues and alternatives and/or coordinates interdisciplinary transportation education.	37
	☐	31.	Students graduate knowing where their automobiles come from and where they go to.	38
	☐	32.	Students evaluate the impact of transportation choices on their immediate surroundings.	38
	☐	33.	DRIVER EDUCATION students coordinate school and community programs for development of local transportation alternatives.	38
CAREER EDUCATION	☐	34.	CAREER EDUCATION brings to students' attention jobs in environmental fields.	39
	☐	35.	Students know that energy and environment considerations affect job availability.	39
	☐	36.	Students are encouraged to admire craftmanship, productive labor, and community-oriented free enterprise.	40
GOAL III RESOURCES	☐	37.	The following State materials and programs are familiar and at hand: RENASCENCE; 1000 SUNS; CONSERVACTION; ENERGY, FOOD, AND YOU; ENCOUNTER WITH THE NORTHWEST ENVIRONMENT; TEACHING POPULATION CONCEPTS; SUN DAY ENERGY WATCH CALENDAR; TRAFFIC SAFETY/FUEL CONSERVATION.	42

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HEADING				
	☐	38.	All students graduate with experience in public involvement and local government.	43
ENVIRONMENT AND COMMUNITY	☐	39.	GOVERNMENT covers local community processes, day-to-day workings of Olympia and Washington, D.C., and follows issues as they develop.	43
	☐	40.	Teachers in all subject areas bring governmental issues into their courses when appropriate.	44
	☐	41.	Teachers coordinate interdisciplinary study of government and community issues, as in the example of cooperation among SCIENCE, HOME ECONOMICS, CAREER EDUCATION CURRENT EVENTS, NORTHWEST STUDIES, and GOVERNMENT.	44
REGIONAL EDUCATION	☐	42.	PACIFIC NORTHWEST STUDIES cover regional self-sufficiency as an element in conservation strategies and in regional culture.	45
	☐	43.	Students are familiar with the centers of decision-making power throughout the Northwest region.	46
SCHOOL OPERATION	☐	44.	Students are involved in the policy and decision-making of the school itself.	46
	☐	45.	Students run recycling, re use, and energy conservation programs as integral parts of school operation.	46
	☐	46.	Students work with community programs of recycling, energy conservation, and environmental awareness.	47
COMMUNITY EDUCATION	☐	47.	The school cooperates in community program development with the State Office of Community Education, SPI, Olympia.	47
	☐	48.	Students regularly attend sessions of local legislative executive, judicial, and political institutions.	47
	☐	49.	Students graduate knowing their public officials.	47

HEADING				PAGE
GOAL IV RESOURCES	☐	50.	The following State materials and programs are familiar and at hand: CISPUS ENVIRONMENTAL LEARNING CENTER; NORTHWEST LEGACY; ENCOUNTER WITH THE NORTHWEST ENVIRONMENT; CONSERVACTION; ENERGY, FOOD, AND YOU.	48
ENVIRONMENTAL STUDIES COURSE	☐	51.	ENVIRONMENTAL STUDIES, as a separate course, meets all four goals presented in this document.	49
	☐	52.	ENVIRONMENTAL STUDIES is offered principally to advanced students with basic science backgrounds.	49
	☐	53.	ENVIRONMENTAL STUDIES students participate in school environmental and community awareness programs.	50
	☐	54.	ENVIRONMENTAL STUDIES students aid in carrying out distirct-wide evaluation and implementation of environmental education as set forth in this document.	50
ULTIMATE OBJECTIVES	☐	55.	Environmental consciousness is established in all personnel and students.	51
	☐	56.	Students achieve self-direction and community responsibility.	51
	☐	57.	Interdisciplinary coordination is implemented at every grade level.	51
	☐	58.	Teachers regularly contact the Supervisors of Environmental Education, SPI, Olympia, to share ideas and advice.	52

X. STATE MATERIALS

AN ANNOTATED RESOURCE LIST

1. CISPUS INFORMATION BOOKLETS

A series of booklets covering various life forms found in the Cispus area: basic identification, life history, and ecology. Useful as a resource for teachers and students in any study of natural history (I) and particularly useful for the natural history component of an outdoor education program (II).

AVAILABLE FROM: Cispus Environmental Center
2332 Cispus Road
Randle, WA 98377

2. A COLLECTION OF IDEAS FOR USE AT CISPUS ENVIRONMENTAL CENTER

A single pamphlet guide to activities possible at Cispus utilizing both indoor and outdoor resources. Simple, clear format with appropriate directions and questions. Useful in teaching basic natural history (I) and particularly useful in designing a successful outdoor study -- conveys a strong emphasis on joint student-teacher inquiry and on the inherent value of all living things (II).

AVAILABLE FROM: Cispus Environmental Center
2332 Cispus Road
Randle, Washington 98377

3. CONSERVACTION

A comprehensive series of activities for energy education at all grade levels and in all disciplines. Developed through a number of teacher writing workshops, previewed in **ConservAction Quarterly**, and closely related to the Sun Day Energy Watch Calendar.

The energy basics contained in these activities are equally applicable in basic science and in more sophisticated energy related classes (I). The value questions, many of them quantifiable, related to energy and environment, economics, and quality of life are stressed throughout

(II). Many of the activities highlight personal and family decisions (III), while others stress the role of regional conservation, school operation, and the local community (IV).

IN PREPARATION. TO BE AVAILABLE FROM:

Office of Science and Environmental Ed.
Superintendent of Public Instruction
Old Capitol Building
Olympia, Washington 98504

4. ENCOUNTER WITH THE NORTHWEST ENVIRONMENT

A single oversize booklet containing detailed information on a cross-section of Washington State environments -- specifically a highway transect from the Pacific Ocean to Eastern Washington. Well outlined information on natural history, energy facilities, settlement patterns, and on field trips in general. Exceptional coverage of the urban environment. Highly interdisciplinary in outlook.

Useful in any study of the environment (I). Particularly useful in organizing an outdoor program emphasizing man's relationship to nature (II). Contains useful references and information regarding the food, transportation, and economic systems of the State (III) and is, of course, an excellent basis for a regional and community oriented education program (IV).

AVAILABLE FROM: Office of Environmental Education
Superintendent of Public Instruction
Old Capitol Building
Olympia, WA 98504

5. ENERGY, FOOD, AND YOU

A comprehensive paperbound volume of principles, activities and resource material related to all aspects of the food system. An outgrowth of an extensive series of evening courses for teachers in the Seattle area over three years. Has recently been accorded international acclaim.

Excellent interdisciplinary approach to environment, energy, and nutrition (I). Quantifiable values in nutrition, health, agriculture, economics, and energy are well-presented -- along with an excellent introduction for adolescents to world-scale environmental problems (II). Personal choice and skills are emphasized throughout, the aim

being to encourage students to make conscious, well-informed lifestyle choices (III). Good background concerning the region's food supply and community/school involvement in the local food system (IV).

AVAILABLE FROM: Energy, Food, and You Program
Shoreline District Offices
N.E. 158th and 20th Avenue N.E.
Seattle, Washington 98155

6. NORTHWEST LEGACY

A 20 minute 16mm color sound film, produced as a companion piece to **Encounter with the Northwest Environment**. Follows a transect through all major State environments, with exceptional photography, narration, and music. Useful as a survey of State natural history and as a sensitizing experience before a field trip (I). A visual delight, the film clearly conveys the aesthetic values inherent in Washington's diverse environments (II). An excellent introduction to the Northwest as a cohesive region (IV).

AVAILABLE FROM: local ESD A-V libraries, and

Office of Environmental Ed.
SPI, Old Capitol Building
Olympia, Washington 98504

7. RENASCENCE: WHERE ALL THINGS BELONG

A 30 minute 16mm color sound film developed in cooperation with the Washington State Office of Environmental Education. Involves a survey of strikingly effective, committed individuals and their approaches to life. Conveys the union between lifestyle and environmental quality. A rewarding introduction to conscious personal decision making (III).

AVAILABLE FROM: local ESD A-V libraries, and

Office of Environmental Ed.
SPI, Old Capitol Building
Olympia, Washington 98504

8. SUN DAY ENERGY WATCH CALENDAR

Patterned after the Oregon Department of Energy's original Family Energy Watch Calendars. Each month is surrounded by information and activities directed to a particular energy concept. Full of basic information, stimulating activities, and long term projects. Excellent graphics -- a handsome addition to any classroom wall.

Information on energy and basic environmental topics (I) and on many of the quantifiable values involved in resource allocation, nutrition, economics, and energy (II). Personal and family decisions are emphasized in many of the activities (III).

AVAILABLE FROM: Office of Environmental Education
Superintendent of Public Instruction
Old Capitol Building
Olympia, Washington 98504

9. TEACHING POPULATION CONCEPTS

A single pamphlet packed with information on basic population dynamics emphasizing both the local region and world-wide trends, with appropriate activities and resource list (III).

AVAILABLE FROM: Office of Environmental Education
Superintendent of Public Instruction
Old Capitol Building
Olympia, Washington 98504

10. 1000 SUNS

A 10 minute 16mm color sound film, shot principally in Seattle, that forcefully and poetically questions the purposes to which we might apply our energy resources -- even if they were infinite. Useful as an introductory collage on energy use and energy issues (I). An exceptional springboard for values discussions (II), particularly those that consider the goals of any lifestyle -- what is it you want from the energy available to you (III).

AVAILABLE FROM: local ESD A-V libraries, and

Office of Environmental Ed.
SPI, Old Capitol Building
Olympia, Washington 98504

11. TRAFFIC SAFETY/FUEL CONSERVATION

A series of activities developed cooperatively between the Offices of Traffic Safety Education and Environmental Education. Encourages a broader scope in driver education by raising fuel conservation issues in the general context of good driving practices, involving quantifiable safety and energy values (II) and the need for personal commitment on issues of safety, responsibility, and conservation (III).

AVAILABLE FROM: Office of Traffic Safety Education
Superintendent of Public Instruction
Old Capitol Building
Olympia, Washington 98504

12. A YEAR AT CISPUS

A small pamphlet describing the range of activities available at Cispus Environmental Center over the course of a particular year. Provides an excellent introduction to the variety of outdoor and interdisciplinary approaches employable at Cispus, along with an actual record of districts and programs using the facility -- who might be contacted for advice in setting up new programs (II).

AVAILABLE FROM: Cispus Environmental Center
2332 Cispus Road
Randle, Washington 98377

Additional information on many of the above programs can be found in the review prepared by the Office of Environmental Education in 1976, **A State of the Art Report**. In addition this report references the many excellent programs in environmental education underway in the State's higher education facilities, individual school districts, and the private sector.

AVAILABLE FROM: Office of Environmental Education
Superintendent of Public Instruction
Old Capitol Building
Olympia, Washington 98504

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